**REMARKS**

Claims 1-25 are all the claims pending in the application. Reconsideration and allowance of all the claims are respectfully requested in view of the following remarks.

**Claim Rejections - 35 USC § 103**

The Examiner rejected claims 1-2, 5, 7, 11-12, and 14-15 under 35 USC § 103(a) as being unpatentable over JPA 3-150041 (hereinafter JPA '041) in view of US Patent 5,291,087 to Pollick et al. (hereinafter Pollick). Applicants respectfully traverse this rejection as it applies to claims 2, 5, 7, 11-12, and 14-15 for the following reasons.

The Examiner has failed to establish *prima facie* obviousness. To establish *prima facie* obviousness of a claimed invention, all the claim limitations must be taught or suggested by the prior art. *In re Royka*, 490 F.2d 981, 180 USPQ 580 (CCPA 1974). All words in a claim must be considered in judging the patentability of that claim against the prior art. *In re Wilson*, 424 F.2d 1382, 165 USPQ 494, 496 (CCPA 1970).

Claims 2 and 7 set forth a sealed actuator which includes, *inter alia*, a motor stator, housings to which the motor stator is attached, a motor rotor, bearings for rotatably supporting a rotation shaft, displacement measuring means for measuring displacement of the motor rotor, a hermetically sealing partition wall made of a nonmagnetic material and disposed at the gap between

the stator and the rotor, wherein the displacement measuring means comprises a resolver rotor made of a magnetic metal material, disposed at a side of the motor rotor, and includes a salient tooth, and a resolver stator including a detection coil magnetic pole which is disposed at a side of the motor stator.

The Examiner states that JPA '041 "discloses the sealed actuator essentially as claimed except for locating the stator in a housing around the rotor and reinforcing means." Applicants respectfully submit that the Examiner's interpretation of JPA '041 is wrong. JPA '041 does not disclose a resolver rotor, having a salient tooth, which is made of a magnetic metal material, as claimed by Applicants.

Moreover, Pollick does not cure the deficiencies of JPA '041. Pollick was cited by the Examiner merely to teach the use of a sealed actuator with the stator mounted in a housing which surrounds the rotor. Pollick does not disclose, teach, or even remotely suggest a resolver rotor having a salient tooth at all, let alone one which is made of magnetic material, as claimed by Applicants.

Claims 2 and 7 are therefore allowable over JPA '041 in view of Pollick. Claims 5 and 11-12 depend from claims 2 and 7, respectively, and thus are allowable for at least the same reasons as set forth with respect to claims 2 and 7. However, Applicants respectfully traverse this rejection as it applies to claim 5 and 12 for the following additional reasons.

Claims 5 and 12 each set forth, *inter alia* and in addition to that in claims 2 and 7 respectively, a magnetic shield plate made of a magnetic metal material disposed between the stator magnetic pole of the motor stator and the detection coil magnetic pole of the resolver stator.

In contrast, JPA '041 fails to disclose a magnetic shield plate, **made of a magnetic metal** material, which is disposed between the stator magnetic pole of the motor stator and the detection coil magnetic pole of the resolver stator. Again, Pollick does not cure the deficiencies of JPA '041. Pollick does not disclose, teach, or even remotely suggest a resolver and thus no magnetic shield plate at all, let alone one made of a magnetic metal, as claimed by Applicants.

Claim 14 sets forth a sealed actuator which includes, *inter alia*, a motor stator, housings to which the motor stator is attached, a motor rotor, bearings for rotatably supporting a rotation shaft, displacement measuring means for measuring displacement of the motor rotor, a hermetically sealing partition wall made of a nonmagnetic material and disposed at the gap between the stator and the rotor, and reinforcing means for reinforcing at least a part of the hermetically sealing partition wall, wherein the reinforcing means are made of substantially the same nonmagnetic metal material as the partition wall.

In contrast JPA '041 does not disclose reinforcing means which are made of substantially the same nonmagnetic metal material as a

partition wall. Pollick does not cure the deficiencies of JPA '041. Pollick does not disclose, teach, or even remotely suggest a reinforcing means for reinforcing at least a part of his hermetically sealing partition wall (4) at all, let alone one made of the same nonmagnetic metal material as the partition wall, as claimed by Applicants.

Claim 14 is therefore allowable over JPA '041 in view of Pollick. Claim 15 depends from claim 14 and is thus allowable over JPA '041 in view of Pollick for at least the same reasons as set forth for claim 14.

The Examiner rejected claims 3-4, 6, 8-9, and 13, under 35 USC § 103(a) as being unpatentable over Japan '041 in view of Pollick and further in view of US Patent 4,893,078 to Auchterlonie (hereinafter Auchterlonie). Applicants respectfully traverse this rejection for the following reasons.

First, Applicants respectfully submit that the Examiner's statement "Japan '041 and Pollick disclose the sealed actuator essentially as claimed" is wrong. As set forth above with respect to claims 2 and 7, Japan '041 and Pollick are deficient. Further, Auchterlonie does not cure the deficiencies of JPA '041 and Pollick. Auchterlonie is cited merely for its alleged teaching of a differential circuit type resolver to determine absolute position of a moving body, and that such resolver can be mounted on a non-magnetic member to increase the accuracy thereof. However, Auchterlonie does not disclose, teach, or even remotely suggest a

resolver rotor, which includes a salient tooth, made of a magnetic metal material. Therefore, *arguendo*, even if one of ordinary skill in the art were motivated to combine Auchterlonie with JPA '041 and Pollick as suggested by the Examiner, any such combination would still not render Applicants' claims unpatentable.

Further, one of ordinary skill in the art would not have been motivated to combination Auchterlonie with JPA '041 and Pollick as suggested by the Examiner.

With respect to claim 3, Auchterlonie discloses that the support (31) is preferably an insulating material such as glass fiber reinforced plastic. However, Auchterlonie also discloses that ferromagnetic materials can be used in the case where high accuracy is not of prime importance. Thus, the teachings of Auchterlonie are equivocal at best. One of ordinary skill in the art looking to improve JPA '041 by following the teachings of Auchterlonie would not be motivated to use a nonmagnetic material over a material loaded with iron.

In contrast, the use of a nonmagnetic substance to mount the resolver rotor, as claimed in claim 3 of the present invention, is imperative to prevent magnetic field from entering the resolver from the motor stack. If the magnetic field of the motor stack enters the resolver, then the resolver will not detect the correct position of the motor rotor.

Moreover, with respect to claim 4, Auchterlonie discloses a differential resolver which includes windings at both the moving

side and the stator side. Thus, when the resolver of Auchterlonie is used in a vacuum (as in JPA '041) the winding of the moving side is exposed to the vacuum and a large amount of gas is generated. Accordingly, one of ordinary skill in the art would not be motivated to use Auchterlonie's resolver in JPA '041 which is in a vacuum environment.

In addition, Auchterlonie discloses no escaping portion for heat produced in the resolver winding of the moving side, so that the moving body is apt to be heated up to a high temperature. When used in a vacuum environment, as is JPA '041, it is difficult to dissipate heat without a heat escaping portion. In turn, the high temperature makes it difficult to keep positional accuracy. Thus, for these additional reasons, one of ordinary skill in the art would not be motivated to modify the actuator motor of JPA '041, which is in a vacuum environment, with the differential resolver of Auchterlonie which is unsuitable for a vacuum environment.

In contrast, the resolver of the present invention is such that a winding is provided only at the stator side. This arrangement eliminates the problem intrinsic to the resolver of Auchterlonie.

Further, *arguendo*, even if one of ordinary skill in the art were motivated to combine Auchterlonie with JPA '041 and Pollick as suggested by the Examiner, such would still not render the present invention unpatentable because the resolver of Auchterlonie is not the equivalent of that in the present invention.

The resolver of the present invention is of a differential type to cancel a magnetic field generated in the motor stack and introduced into the resolver. The resolver of the present invention is of a differential circuit type for the purpose of improving the S/N ratio. In contrast, the differential resolver of Auchterlonie is for positional detection with high accuracy. Such a differential resolver does not necessarily improve the S/N ratio by canceling a magnetic field. The resolvers are thus not equivalents.

Thus, for the above reasons, claims 3-4 are patentable over JPA '041 in view of Pollick and further in view of Auchterlonie. Claims 6 and 13 contain similar limitations to those set forth in claims 3, 4, and 5. Applicants respectfully submit that claims 6 and 13 are allowable for at least the same reasons as set forth above with respect to claims 3-5. Claims 8 and 9 contain limitations similar to those set forth in claims 3 and 4, respectively, and are therefore allowable for at least the same reasons as set forth with respect to claims 3 and 4.

The Examiner rejected claim 10 under 35 USC § 103(a) as being unpatentable over JPA '041 in view of Pollick and further in view of Anger. Applicants respectfully traverse this rejection for the following reasons.

First, Applicants respectfully submit that the Examiner's statement "Japan '041 and Pollick disclose the sealed actuator essentially as claimed" is wrong. As set forth above with respect

to claim 7, Japan '041 and Pollick are deficient. Further, Anger does not cure the deficiencies of JPA '041 and Pollick. Anger is cited merely for his alleged teaching of both a fine resolver and a coarse resolver to simultaneously determine both fine and coarse positions of the system. However, Anger does not disclose, teach, or even remotely suggest a resolver rotor, which includes a salient tooth, made of a magnetic metal material. Therefore, *arguendo*, even if one of ordinary skill in the art were motivated to combine Anger with JPA '041 and Pollick as suggested by the Examiner, any such combination would still not render Applicants' claims unpatentable.

Further, Anger does not disclose, teach, or suggest the same arrangement of elements as set forth in Applicants' claim 10. According to the present invention, the structure of the coarse resolver (one pole/one rotation) and the fine resolver (multipole/one rotation) is a system which eliminates the necessity of returning to the origin to determine the position of the motor rotor. In contrast, the resolvers of Anger simultaneously determine a fine position and a rough position of the system. Anger's configuration does not eliminate the need to return to the origin to determine the position of the motor rotor, as does the configuration in the present invention. Thus, *arguendo*, even if one of ordinary skill in the art were motivated to combine Anger with JPA '041 and Pollick, as suggested by the Examiner, any such

combination would still not include the equivalent of Applicants' claimed displacement measuring means.

The Examiner rejected claims 16-18, 22-23, and 25, under 35 USC § 103(a) as being unpatentable over JPA '041 in view of Pollick and further in view of JPA 3-150042 (hereinafter JPA '042). Applicants respectfully traverse this rejection for the following reasons.

First, Applicants submit that the Examiner's interpretation of JPA '042 is wrong. JPA '042 contains no disclosure, teaching or suggestion whatsoever that a plurality of actuators are coupled to form a single unit, as set forth in Applicants' claims 16-18.

Further, with respect to claims 16 and 18, Applicants respectfully submit that the Examiner's statement "Japan '041 and Pollick disclose the sealed actuator essentially as claimed" is wrong. Claims 16 and 18 contain, *inter alia*, the limitation that the rotor magnetic pole includes a salient pole tooth of a magnetic substance, which is similar to that found in claims 2 and 7. As set forth above with respect to claims 2 and 7, Japan '041 and Pollick are deficient. Further, JPA '042 does not cure the deficiencies of JPA '041 and Pollick because JPA '042 does not disclose, teach, or even remotely suggest a resolver rotor, which includes a salient tooth, made of a magnetic metal material. Therefore, *arguendo*, even if one of ordinary skill in the art were motivated to combine JPA '042 with JPA '041 and Pollick as

suggested by the Examiner, any such combination would still not render Applicants' claims unpatentable.

For the above reasons, claims 16-18 are patentable over JPA '041 in view of Pollick and JPA '042. Claims 19-25 depend from claims 16-18 and are thus allowable for at least the same reasons as set forth with respect to claims 16-18. However, Applicants respectfully traverse this rejection as it applies to claims 23 and 25 for the following additional reasons.

Claim 23 sets forth, *inter alia*, the limitation that a magnetic shield plate is made of a magnetic metal material and is disposed between the stator magnetic pole of the motor stator and the detection coil magnetic pole of the resolver stator. This limitation is similar to that in claim 5. Thus, Applicants' arguments with respect to claim 5 are pertinent and are herein incorporated by reference.

Claim 25 sets forth, *inter alia*, the limitation that the rotation shaft of the motor rotor is an extension shaft fixed to the motor rotor. This limitation is not found in, taught, or even remotely suggested by any of the references of record.

The Examiner rejected claims 19-20 and 24 under 35 USC § 103(a) as being unpatentable over JPA '041 in view of Pollick and JPA '042 and further in view of Auchterlonie. Applicants respectfully traverse this rejection for the following reasons.

First, Applicants respectfully submit that the Examiner's assertion "JPA '041, Pollick and JPA '042 disclose the sealed

actuator system essentially as claimed" is wrong. Claims 19-20 and 24 depend from claim 18. Applicants' arguments with respect to the deficiencies of JPA '041, Pollick and JPA '042, in connection with claim 18, are pertinent and are herein incorporated by reference. Further, Auchterlonie was cited merely for his alleged teaching of a differential circuit type resolver to determine absolute position of a moving body, and that such resolver can be mounted on a non-magnetic member to increase the accuracy thereof. However, Auchterlonie does not disclose, teach, or even remotely suggest that the rotor magnetic pole includes a salient pole tooth of a magnetic substance, or a plurality of unit sealed actuators connected in series to each other. Therefore, *arguendo*, even if one of ordinary skill in the art were motivated to combine Auchterlonie with JPA '041 and Pollick as suggested by the Examiner, any such combination would still not render Applicants' claims unpatentable.

Additionally, with respect to claims 19 and 20, Auchterlonie is deficient a teaching of the claimed subject matter for the same reasons as set forth above with respect to claims 3 and 4 respectively. Therefore, Auchterlonie does not cure the deficiencies of JPA '041, Pollick, and JPA '042. Further, claim 24 contains limitations similar to those in claims 3-5. Auchterlonie does is also deficient a teaching of the subject matter of claim 24 for the same reasons as set forth above with respect to claims 3-5,

and thus not cure the deficiencies of JPA '041, Pollick, and JPA '042.

The Examiner rejected claim 21 under 35 USC § 103(a) as being unpatentable over JPA '041 in view of Pollick and Japan '042 and further in view of Anger. Applicants respectfully traverse this rejection for the following reasons.

First, Applicants respectfully submit that the Examiner's assertion "JPA '041, Pollick and JPA '042 disclose the sealed actuator system essentially as claimed" is wrong. Claim 21 depends from claim 18. Applicants' arguments with respect to the deficiencies of JPA '041, Pollick and JPA '042, in connection with claim 18, are pertinent and are herein incorporated by reference. Further, Anger was cited merely for his alleged teaching of utilizing both a fine resolver and a coarse resolver. However, Anger does not disclose, teach, or even remotely suggest that the rotor magnetic pole includes a salient pole tooth of a magnetic substance, or a plurality of unit sealed actuators connected in series to each other. Therefore, *arguendo*, even if one of ordinary skill in the art were motivated to combine Auchterlonie with JPA '041 and Pollick as suggested by the Examiner, any such combination would still not render Applicants' claims unpatentable.

Additionally, claim 21 includes, *inter alia*, the limitation that the displacement measuring means includes a coarse resolver and a fine resolver. This limitation is similar to that in claim 10. Applicants' arguments with respect to the deficiencies of

Anger's teaching, set forth above with respect to the subject matter of claim 10, are thus pertinent here and are herein incorporated by reference. Therefore, Anger does not cure the deficiencies of JPA '041, Pollick, and JPA '042.

**Conclusion**

In view of the above remarks, reconsideration and allowance of this application are now believed to be in order, and such action is hereby solicited. If any points remain in issue which the Examiner feels may be best resolved through a personal or telephone interview, he is kindly requested to contact the undersigned at the number listed below.

Applicant hereby petitions for any extension of time which may be required to maintain the pendency of this case. Any required fee, except for the Issue Fee, for such extension is to be charged to Deposit Account No. 19-4880.

Respectfully submitted,

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